

b.) Amendment to the Claims

Claims 1-30 (Cancelled).

31. (Currently Amended) A process for producing a sugar chain or complex carbohydrate, which comprises:

selecting, as an enzyme source, the sugar a sugar chain synthesizing agent which comprises, as an active ingredient, a polypeptide among the following (a), (b), (c), (d), (e), (f), (g) and (h):

- (a) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:1;
- (b) a polypeptide comprising an amino acid sequence of positions 41-397 in the amino acid sequence represented by SEQ ID NO:1;
- (c) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:2;
- (d) a polypeptide comprising an amino acid sequence of positions 45-372 in the amino acid sequence represented by SEQ ID NO:2;
- (e) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:3;
- (f) a polypeptide comprising an amino acid sequence of positions 45-372 in the amino acid sequence represented by SEQ ID NO:3;

(g) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:4, and

(h) a polypeptide comprising an amino acid sequence of positions 62-378 in the amino acid sequence represented by SEQ ID NO:4,

or wherein the polypeptide comprises an amino acid sequence in which one or more amino acids are deleted, substituted or added in an amino acid sequence according to any of (a)-(h), and having an activity involved in the synthesis of a poly-N-acetyllactosamine sugar chain; consisting of (a) an amino acid sequence represented by SEQ ID NO:2, (b) an amino acid sequence of positions 45-372 in the amino acid sequence represented by SEQ ID NO:2, or (c) an amino acid sequence having 95% or more homology with the amino acid sequence in the above (a) or (b) and having  $\beta$ 1, 3-N-acetylglucosaminyltransferase activity;

allowing

(1) the enzyme source,

(2) an acceptor substrate selected from i) N-acetyllactosamine ( $\text{Gal}\beta 1-4\text{GlcNAc}$ ),  $\text{Gal}\beta 1-3\text{GlcNAc}$  or lactose ( $\text{Gal}\beta 1-4\text{Glc}$ ) ( $\text{Gal}\beta 1-4\text{GlcNAc}$ ),  $\text{Gal}\beta 1-3\text{GlcNAc}$  or lactose ( $\text{Gal}\beta 1-4\text{Glc}$ ), ii) an oligosaccharide having an N-acetyllactosamine,  $\text{Gal}\beta 1-3\text{GlcNAc}$  or  $\text{Gal}\beta 1-3\text{GlcNAc}$  or lactose structure at the non-reducing end, and iii) a complex carbohydrate having an N-acetyllactosamine,  $\text{Gal}\beta 1-3\text{GlcNAc}$   $\text{Gal}\beta 1-3\text{GlcNAc}$  or lactose structure at the non-reducing terminal, and

(3) uridine-5'-diphosphate N-acetylglucosamine

to be present in an aqueous medium to produce and accumulate a sugar chain or complex

carbohydrate in which N-acetylglucosamine is added to a galactose residue of the acceptor substrate via a  ~~$\alpha$ 1,3-linkage~~  $\beta$ 1,3-linkage; and

recovering the sugar chain or complex carbohydrate from the aqueous medium.

32. (Currently Amended) A process for producing a sugar chain or complex carbohydrate to which galactose is added, which comprises:

selecting, as an acceptor substrate, the N-acetylglucosamine-added reaction product obtained by the method according to claim 31;

allowing

- (a) the acceptor substrate,
- (b) a GlcNAc  ~~$\alpha$ 1,4-galactosyltransferase~~  $\beta$ 1,4-galactosyltransferase, and
- (c) uridine-5'-diphosphogalactose

are allowed to be present in an aqueous medium to produce and accumulate a sugar chain or complex carbohydrate in which galactose is added to the N-acetylglucosamine residue at the non-reducing terminal of the acceptor substrate via a  ~~$\alpha$ 1,4-linkage~~  $\beta$ 1,4-linkage; and

recovering the galactose-added sugar chain or complex carbohydrate from the aqueous medium.

33. (Currently Amended) A process for producing a sugar chain or complex carbohydrate to which a poly-N-acetyllactosamine sugar chain is added, which comprises:

selecting, as an enzyme source, the sugar a sugar chain synthesizing agent which comprises, as an active ingredient, a polypeptide ~~among the following~~ (a), (b), (c), (d), (e), (f), (g) and (h):

- (a) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:1,
- (b) a polypeptide comprising an amino acid sequence of positions 41-397 in the amino acid sequence represented by SEQ ID NO:1,
- (c) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:2,
- (d) a polypeptide comprising an amino acid sequence of positions 45-372 in the amino acid sequence represented by SEQ ID NO:2,
- (e) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:3,
- (f) a polypeptide comprising an amino acid sequence of positions 45-372 in the amino acid sequence represented by SEQ ID NO:3,
- (g) a polypeptide comprising the amino acid sequence represented by SEQ ID NO:4, and
- (h) a polypeptide comprising an amino acid sequence of positions 62-378 in the amino acid sequence represented by SEQ ID NO:4,  
or wherein the polypeptide comprises an amino acid sequence in which one or more amino acids are deleted, substituted or added in an amino acid sequence according to

any of (a)-(h), and having an activity involved in the synthesis of a poly-N-acetyllactosamine sugar chain; consisting of (a) an amino acid sequence represented by SEQ ID NO:2, (b) an amino acid sequence of position 45-372 in the amino acid sequence represented by SEQ ID NO:2, or (c) an amino acid sequence having 95% or more homology with the amino acid sequence in the above (a) or (b) and having  $\beta$ 1, 3-N-acetylglucosaminyltransferase activity;

allowing

(1) the enzyme source,  
(2) a GlcNAc  $\beta$ 1,4-galactosyltransferase  $\beta$ 1,4-galactosyltransferase,  
(3) an acceptor substrate selected from i) N-acetyllactosamine ( $\text{Gal}\beta 1$ -4GlcNAc),  $\text{Gal}\beta 1$ -3GlcNAc or lactose ( $\text{Gal}\beta 1$ -4Glc) ( $\text{Gal}\beta 1$ -4GlcNAc),  $\text{Gal}\beta 1$ -3GlcNAc or lactose ( $\text{Gal}\beta 1$ -4Glc), ii) an oligosaccharide having an N-acetyllactosamine,  $\text{Gal}\beta 1$ -3GlcNAc  $\text{Gal}\beta 1$ -3GlcNAc or a lactose structure at the non-reducing end, iii) a complex carbohydrate having an N-acetyllactosamine,  $\text{Gal}\beta 1$ -3GlcNAc  $\text{Gal}\beta 1$ -3GlcNAc or a lactose structure at the non-reducing terminal, and iv) the reaction product obtained by the process according to claim 31 or 32,

(4) uridine-5'-diphospho-N-acetylglucosamine, and  
(5) uridine-5'-diphosphogalactose

to be present in an aqueous medium to produce and accumulate a sugar chain or complex carbohydrate in which a poly-N-acetyllactosamine sugar chain is added to the non-reducing terminal of the acceptor substrate; and

recovering the poly-N-acetyllactosamine sugar chain-added sugar chain or

complex carbohydrate from the aqueous medium.

Claims 34-37 (Cancelled).

38. (Previously Presented) The process according to claim 31, wherein the complex carbohydrate is a complex carbohydrate selected from a glycoprotein, a glycolipid, a proteoglycan, a glycopeptide, a lipopolysaccharide, a peptidoglycan, and a glycoside in which a sugar chain is bound to a steroid compound.

Claim 39-61 (Cancelled).